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THE COST OF WAR

AND WAYS OF REDUCING IT SUGGESTED

BY ECONOMIC THEORY

A LECTURE

BY

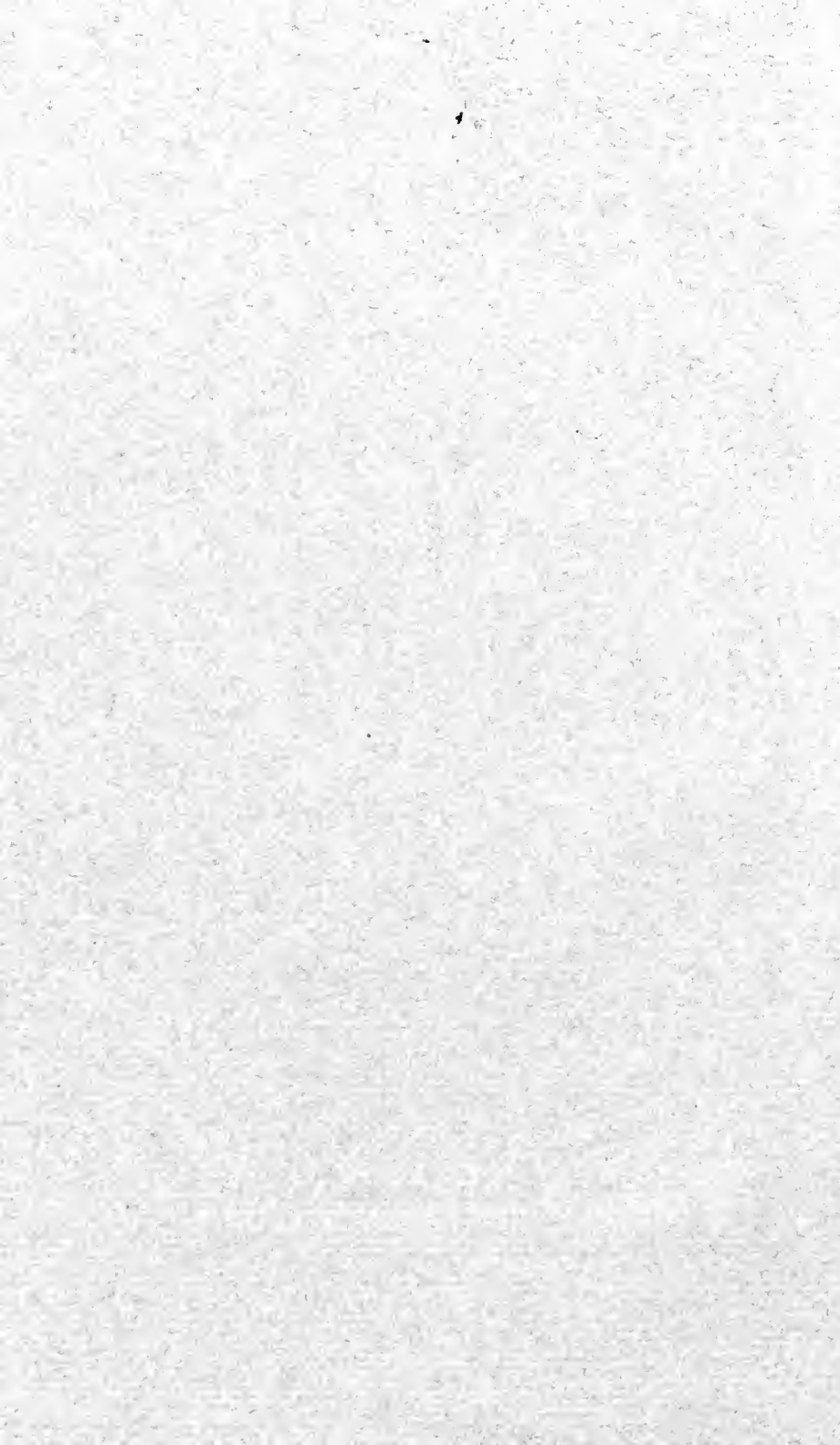
F. Y. EDGEWORTH, M.A.

FELLOW OF ALL SOULS

PROFESSOR OF POLITICAL ECONOMY IN THE UNIVERSITY OF OXFORD

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L. C.

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THE COST OF WAR

AND WAYS OF REDUCING IT SUGGESTED BY ECONOMIC THEORY

SUGGESTIONS only, not instructions, will be offered here. Looking at affairs from a somewhat distant height of abstraction, economic theory points out rather the general direction than the exact path in which steps are to be taken. There may at least be avoided the misdirection which results from indistinct general views.

Let us begin by removing the obscurity due to the ambiguity of the term 'cost'. It is defined in the leading English dictionary as 'that which must be given or surrendered in order to acquire, produce, accomplish, or maintain something'. In a secondary or, as it is called by Murray, 'transferred' sense, 'cost' may mean expenditure of labour. So Dr. Marshall distinguishes the 'money cost', the 'expenses of production' from the 'real cost of production', the efforts and sacrifices that are involved in making a commodity. In accordance with this distinction let us first consider the pecuniary cost of war, then the felt sacrifices which, though very imperfectly measured by price, are in some sense compensated by money payments. It is hardly within the province of economic theory to treat of the still more real cost which consists in the sacrifice of invaluable lives, that loss which money can neither measure nor console.

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The expenditure by a Government for military purposes in the past may be ascertained with fair accuracy. It is a matter of official statistics; treasury accounts, votes of credit, and the like are commonly available. There is no difficulty, for instance, in showing that the direct cost to Germany of the Franco-German war was about £75,000,000, or £85,000,000; different figures corresponding to different definitions of the outlay under consideration. There is more room for difference of definition than might be supposed. For instance, ought the expense of renewing military equipments deteriorated by the war to be included? Statisticians after settling the cost of the war per day differ as to the date up to which the number of days is to be counted. On the side of France there is an even greater diversity as to the limit up to which the ravages of war are taken to extend. Ought we to follow French statisticians in attributing to the Franco-German war the cost of suppressing the Paris Commune?

It boots not here to reproduce the details of expenditure on recent wars. These accounts have been examined with much care by several German writers with a view to preparing for a future war, and even prognosticating its cost. Perhaps the wisest of them is one who, writing in 1913, concludes that 'the war of the future' will make an *immeasurable* demand on the resources of the country. Certainly it proves impossible to see far ahead as to the expense of the war in which we are now engaged; the estimates are continually beggared by the expenditure.

But even if the future expenses of Government were as accurately ascertainable as the past, these data, however useful to the statesman, would not satisfy the theoretical economist who contemplates not merely the

drain upon the national revenue, but also the loss of national income consequent on war. The interruption to the production of commodities caused by the diversion of many million men to works of war, whether in the field or in the munition-shop, must be immense. Yet it need not be exaggerated, as happens when a statistician first puts down as a charge on the State the sustenance of men at the front and their families at home, and then includes among the losses to the community the value of that sustenance which would have been created by those men if they had remained at work as civilians. In reality there has only been one loss—not two losses—of that value to the community. But even when this correction has been made, the loss of income due to the dislocation of production must be enormous. In a country in part occupied and ravaged by the enemy, as France in 1870-1 and again now, the indirect loss of income may plausibly be estimated as equal to or even greater than the direct expenditure of Government. For our own country so far the indirect expense is doubtless relatively to the direct much smaller; it could not well be as great seeing that our direct expenditure is now say about 1,100 millions per year (exclusive of loans which are to be repaid) while our national income is or was not much more than 2,200 millions.

The impossibility of obtaining an accurate figure for the indirect loss of income is well illustrated by the difference between two masters of statistical method, Giffen and De Foville, in their estimate of the losses under this head to France in the Franco-German war. The results of the two statisticians are, indeed, nearly coincident, about 150 millions. But the bases of their calculations are entirely discrepant.

Their estimates may also be contrasted under another head, the loss of capital, the deterioration of permanent power of production. Giffen, writing immediately after the war, anticipates a considerable loss under this head, and adds as a separate item the loss of savings which would have been made but for the war. De Foville, writing some years later with the advantage which history has over prophecy, shows that Giffen's anticipations were falsified by the recuperative energies of France.

There are also great differences among statisticians under another head, what has been called the loss of 'living capital'. There seems an impiety in associating loss of money with the loss of noble lives. Yet as the death of the breadwinner may bring not only grief but ruin to a family, so those who in the prime of life have died for their country leave their country poorer even in respect of material wealth, besides more precious elements of national welfare. The pecuniary loss under this head is very variously estimated; statisticians not always sufficiently distinguishing between the total production a man makes and that which he makes over and above what he spends upon himself. Of the surplus thus defined, a very moderate estimate is that of De Foville, about £120 as the net capital value lost to his country by the death of a French private soldier. The moderation of this estimate is compensated by the high figure which the same statistician has assigned, with reference to the Franco-German war, to another factor in the calculation, the number of lives lost or industrially incapacitated through the war. There are to be taken into account not only those who have been killed or crippled in war, but also those who have prematurely perished, or at least become lost to in-

dustry, through distress occasioned by the war; perhaps even those who, as suggested by De Foville, have failed to be born in consequence of the war! However we compute the items of this reckoning, there is no doubt but that the total is immense though indefinite. The estimate made by a competent statistician for the cost under this head to the British Empire for a single year of a war such as we are now waging, namely £300,000,000, seems not immoderate.

The colossal account is not yet complete; if we are to include the cost of preparing for, as well as that of waging, wars. The total of the military and naval budgets of European States in times of peace has been estimated by Professor Bastable as some £275,000,000 annually so long ago as 1900. It must have become much greater in the following years. Statistics compiled by Mr. Hirst for the principal combatants in the present war (not including Italy) show an annual expenditure of £450,000,000. Over and above these official budgets is to be reckoned a great loss of wealth, in countries where universal service prevails, due to the withdrawal for considerable lengths of time of able-bodied—and able-minded—men from productive industry to military exercises. This indirect loss has been estimated by competent authorities as nearly or quite equal to the direct officially recorded cost. But I suspect that the loss of wealth under this head is not or need not be all a *net* loss; account being taken of the educational value of a well-instituted system of universal training. Temporary change of occupation is often the best rest. What would students think of the argument that all the time spent in playing hockey or on a walking-tour is lost to study!

Because the money-cost of war cannot be accurately

reckoned, it must not be supposed that suggestions for reducing the cost are unavailing. A quantity which does not admit of exact measurement, cannot be equated to a definite number of units, may still be the subject of an *inequation*, may admit of the statement that it is *greater, or less*, in certain conditions than what it would have been in certain other conditions. Thus the cost of war is known to be greater or less, according as (other things being the same) the necessary expenses are defrayed by methods that press less or more heavily on the capital, the permanent productive power of a country. For instance, a *forced loan*, of which mention is sometimes made in Germany, and even in this country, levied indiscriminately on capital in different employments, is likely to hamper enterprise more than when it is left to the lender to select what capital, if any, he can best spare. But I postpone some suggestions relating to capital, as the topic will recur in connexion with the division of the subject to which I now proceed—‘real cost’, felt sense of trouble and privation.

The Real Cost of War comprises as its principal item the fatigues and sufferings of the men who are fighting, or have been wounded in battle. But as it is plainly not within the competence of economic theory to make any recommendation regarding military operations or equipments, so its suggestions are mainly directed to reducing the cost, pecuniary or real, incident to the acquisition of things judged necessary by higher authorities.

The character of quantity without measureability, which may have seemed remarkable with reference to a reckoning in money, is a normal attribute of real cost. ‘Moral arithmetic’ has not much to do with numerical calculations. The only question is whether

the object of this higher computation is indeed a quantity, comes under the category of the more or less. The degree of consensus in this matter is probably obscured by the use of different terms—utility, satisfaction, welfare, happiness, pleasure, and their opposites. So even as to money matters, one man thinks in pounds, another in dollars. I trust that the denomination which I am about to employ in reckoning real cost may prove generally acceptable. My use of the conceptions and phraseology proper to the English utilitarian philosophy will perhaps appear too insular to those who hold with Nietzsche that 'Man does not aspire to happiness; only the Englishman does that'. I cannot hope to be intelligible to mentalities such as that of the German Professor who, while advocating the 'militarization' of industry in place of 'the old principle of individualism', is careful to explain that his object is not the 'greater happiness of the individual (*Glückseligkeit*), but the strengthening of the organized collectivity' to the end of greater efficiency (*Leistungsfähigkeit*). On the lines of Bentham, J. S. Mill, and Sidgwick, I assume that a given number of persons derive from the consumption of wealth a utility or satisfaction, the amount of which probably, and in general, depends largely on three main circumstances: the amount of wealth distributed, the proportions in which it is distributed among the different persons, and the distribution in time, the arrangement of the intervals at which the using up of the said goods may occur.

The relation between amounts of wealth and welfare, which has been very generally accepted as at least a first approximation, is that which was propounded by a high authority on the theory of Probabilities, Daniel Bernouilli. In the version given by Dr. Marshall, 'we

may regard the satisfaction which a person derives from his income as commencing when he has enough to support life, and afterwards as increasing by equal amounts with every successive percentage that is added to his income and *vice versâ* for loss of income'. But Dr. Marshall adds, 'systems of graduated taxation which are being foreshadowed in several countries are in some measure based on the assumption that the addition of one per cent. to a very large income adds less to the well-being of its owner than an addition of one per cent. to smaller incomes would . . .'. To the same effect Professor Pigou, citing Sidgwick, says: 'Modern opinion is I think tending towards this view and away from Bernouilli's suggestion.' And to cite an authority who will not be suspected of socialistic innovations, one who may be regarded as a sort of economic Cato, the Editor of the *Edinburgh Review*, in the current number of the *Review*, with reference to a problem which here concerns us, the distribution of the burden of war taxation, testifies that 'there is no real equality of sacrifice between the man who saves 1s. a week out of £1 and a man who saves 10s. out of £10'. The opinion of philosophic Conservatives as represented by Mr. Balfour may be adduced on the same side. Referring to the taxation of 'surplus' income proposed in the budget of 1909, Mr. Balfour does not dispute that you might charge a larger proportion on larger than on smaller incomes. He does not hold with J. S. Mill that 'above a very small minimum all property whatever its amount ought to be taxed in exact arithmetical proportion to its quantity'.

I cannot here dwell longer on the problem connected with the first and second circumstances which I have distinguished as affecting real cost. It must suffice to

express approbation of a moderately progressive taxation very cautiously introduced, referring in defence of this position to previously published disquisitions. It is impossible here to survey with equal eye the whole of my immense subject. It is better to concentrate scrutiny on points at which some obscurity still remains. Such points are presented by our third circumstance, the arrangement of times at which portions of wealth are used, an arrangement which is affected by the operations of borrowing and lending. The resort to public loans has been condemned by two very high authorities, two of the greatest intellects that have ever been applied to economic theory, Hume and Adam Smith. Kant, too, in his remarkable proposals for perpetual peace makes it a preliminary condition that no debts should be contracted for purposes of carrying on war. Perhaps Kant meant no more than a pious wish that all States should agree to abstain from creating war debts, a counsel of perfection on a par with Mr. H. G. Wells's recent proposal that the nations should agree to abandon the use of cannon and confine themselves to rifles. But why not abandon 'villainous saltpetre' and 'those vile guns' altogether, and return to the antique javelins? But if one combatant will strain his resources to the utmost, and the other is obliged to act similarly at the risk of being extinguished, in these circumstances even the straitest sect of economists do not now insist on 'the necessity of meeting from year to year the expense which a war entails', as Gladstone advised at the outbreak of the Crimean War. Even the author of the *Arbiter in Council* thinks Kant's proposal impracticable; 'loans must continue as long as wars'.

But contemporary economists do not unequivocally reject another tenet of the older writers, which I presume

to think is also untenable, the proposition that in the words of Macaulay (dissenting) there is 'an exact analogy between the case of an individual who is in debt to another individual and the case of a society which is in debt to a part of itself'. Thus the leading British writer on public finance maintains that 'in all essential points the analogy between the public and private debtor does hold good and should never be lost sight of'. Professor Bastable regards as 'more than questionable' Macaulay's criticism of that analogy; 'erroneously imagined', according to Macaulay, but according to Professor Bastable, as I interpret, conceived correctly. The leading French authority on the science of finance also pronounces against the doctrine that 'national debts are debts from the right hand to the left'. The denial of the distinction between foreign and internal loans is made with peculiar trenchancy by one of my predecessors, Professor Rickards, in a lecture on the *Financial Policy of War*, delivered in 1855 with special reference to the Crimean War. 'To those who are not fundholders', Rickards says, 'the burden is the same as a foreign debt.' He adverts with disapproval to a dictum of the first Sir Robert Peel delivered in 1826: 'The public debt is due from ourselves to ourselves, and resolves itself into a family account.' A rhyming comment made upon this dictum by the poet Moore is mentioned by Rickards with approval:

(Britannia loquitur).

'My debt not a penny takes from me,
As sages the matter explain.
Bob owes it to Tom, and then Tommy
Just owes it to Bob back again.'

It is hard to contend with the poets as well as the philosophers and economists. On an issue so closely

associated with burning questions it may be well to imitate the cautious man who would not assent to an axiom of Euclid until he knew what use would be made of the admission. The view which Macaulay accepts was no doubt originally associated with the dangerous paradox that 'public incumbrances are of themselves advantageous independently of the necessity of contracting them', that 'a State becomes more flourishing by its debts'. If assent to old Sir Robert's dictum is taken to imply that there is no practical difference between a loan contracted for the purpose of manufacturing shells and a loan conducting to productive industry, by all means let us avoid the Charybdis of bottomless extravagance and incline rather to the not very monstrous Scylla of inexact conceptions. Otherwise the family analogy appears to me correct enough. Here is a family consisting of a husband who has an appointment in England which requires his presence during a part of the year and a wife with landed property in Ireland which makes it desirable that they should reside part of the year in that country. They have agreed that the expenses of their English establishment should be paid entirely out of the English source of income, and likewise their expenditure in Ireland from the Irish source. Suddenly they become liable to a heavy charge; say the costs of an unavoidable lawsuit. Two courses are now open to them. They may borrow the sum from third parties, burdening themselves with the payment of interest for a long period of years. That is the course analogous to a foreign loan. Or they may agree to pay the costs immediately by 'a great sacrifice at once', as Mill says, with reference to certain kinds at least of public loans, in contrast to 'a small one indefinitely prolonged'. Only, as there happens to be a large

balance in the Irish bank, it is convenient that the whole of the requisite cash should be taken from that source. The depletion may render it necessary to modify the former division of expenses. For some years at least it may be necessary that a contribution should be made from the English source of income to the expenses of the Irish establishment. There is all the difference, surely, between the two ways of defraying the costs. That is presuming that 'they twain' are one. If a community is considered not *in globo*, but consisting of 'two cities', the rich and poor, then Rickard's conception that 'to those who are not fundholders the burden is the same as a foreign debt' is less inappropriate. But the antithesis of interests between rich subscribers and poor non-subscribers is not so sharp as it may appear; owing to the circumstance that the subscribers to an *internal* loan (unlike the creditors of a foreign country) are taxed for the payment of (a part of) the interest on the loan. It may be added that our Government by extending to the poorer classes facilities for lending to the State has done much to mitigate the antithesis presumed by Rickards; acting curiously enough in accordance with a recommendation wisely made by Rickards in the said discourse.

The analogy of family finance is too commonly ignored by the advocates of war-taxes versus war-loans. For example, M'Culloch dwells on the no doubt striking fact that in the latter part of the great war with France the current expenses of the war were more than met by taxation; a considerable part of the enormous taxation being required only for the payment of interest on the debt contracted during the first part of the war (before the peace of Amiens). There is suggested the analogy of a not very thrifty man who rather

than undergo some privation for a season has burdened himself with heavy payments to usurers for a long period of years. If Englishmen had shouldered the cost of the first war—or even half of it—at the time when it was incurred, they would not, implies M'Culloch, have been burdened with a weight of interest during the second war and long after. But Englishmen did shoulder the cost of the first war—the whole cost—at the time when it was incurred! Nelson did not shake the Baltic and the Nile with paper pellets, scrip of war-loan, but with ships and cannons and men paid by things. Englishmen who had command of things put them at the disposal of Government at the time. At the time when victories were gained resources were lost to peaceful purposes. That part of the national account remains the same whichever financial arrangement is supposed. The balance of expediency depends largely on the apportionment of taxes for the payment of interest between the moneyed classes who subscribe to the loans and the non-subscribing poor. There has also to be balanced the diminution of productive investment occasioned by the respective methods of defraying the cost of war. It may well be that this loss to future wealth caused by present taxation is less than what would be caused by raising an equal sum by loans. It is as if in our parable the sum taken from the Irish bank to meet the sudden charge imposed on the family would otherwise have been partly employed in making or repairing drains and fences on the estate. In that case it might be better to meet the cost by a levy in due proportion on both sources of income, pinching expenditure on both establishments, without any right-to-left-hand transactions between the consorts. But what if the English source of income, which it is now proposed

to tax more heavily than according to the first arrangement, would also have been applied in part productively? This is in fact the supposition to which M'Culloch's treatment of the case corresponds. The really important distinction between an internal loan and a tax, the probably greater tendency of the former to diminish future production, this difference is apt to be lost sight of by those who make no distinction between an internal and an external loan.

Altogether, the analogy between an internal war-loan and a loan raised by a private individual for unproductive purposes is less exact and helpful than is commonly assumed. The magnitude of the interest in the former case is not a decisive objection until there is given with respect to the taxes out of which the interest is paid the apportionment of taxation between subscribers to the loan (or their representatives) and non-subscribers. There is involved not only what I have called distribution in time, but also distribution among persons.

One definite suggestion which emerges from these general views on war-loans is that we should guard against imposing on the poorer classes an undue proportion of the taxation necessary for payment of the interest on a war-loan. Let us avoid the error committed by our forefathers when, by abolishing income-tax immediately after the great war, they unduly lightened the burden of the well-to-do. A similar suggestion occurs from another point of view; excessive taxation of the laborious poor by reducing their income below the limit of efficiency is apt to diminish the personal capital, and therefore the productive power of a nation. With regard to material capital, so definite a suggestion has not emerged from our discussion of real cost. But we may learn at least

a lesson of modesty from the mistakes into which, as now generally believed, the greatest intellects have fallen in approaching this subject. There is inculcated caution in accepting confident criticisms of Governments for not introducing war-taxes at the time or to the amount that appear good to the critic; especially when his judgment is seen to be affected by an erroneous *a priori* principle based on a false analogy between an internal public and an ordinary private loan.

To minimize the diminution of capital—this suggestion which constantly recurs, whether we consider pecuniary or real cost, deserves to be considered more closely, and free from the ambiguities to which popular language is liable. I must confess that in reading much that is written about ‘capital’ I experience a certain mental blur. I am disposed to accept what Jevons says in a letter which I had the honour of receiving from him. Referring to his theory of Capital as ‘involving solely the element of time’, he says: ‘As long as you speak of “capital” as distinguished from “capitalization”, you are pretty sure to go wrong.’ Let us endeavour to avoid what Locke calls the ‘abuse of words’ by applying as far as possible the remedy which the father of English philosophy prescribes: ‘presenting to his [a man’s] senses that subject which may produce in his mind and cause him actually to have the idea that word stands for.’ I do not propose, however, to carry out the method of palpable exposition so fully as the wise men in Swift’s Laputa, who used to communicate with each other by exhibiting the things of which words are only the names. Each philosopher would carry a great bundle of things on

his back ; and the narrator continues, 'I have often beheld two of these sages almost sinking under the weight of their packs, like pedlars among us, who, when they met in the street, would lay down their loads, open their sacks, and hold communication for an hour together.'

Well, I shall spend only a small part of an hour in an illustration intended to body forth Jevons's conception of capital 'involving solely the element of time'. Let us represent the time which the process of production requires by the length of a channel down which flows a current of goods used in production, a volume of materials and services. The channel may be imagined of uniform depth, so that the breadth at different points is a measure of the volume. The volume continually increases by the accession of work and waiting, as the stream descends through successive stages of production, from raw materials to half-manufactured goods, on to the final stage at which the channel of production debouches into the sea of consumption. Thence, it is to be conceived, by a backward movement articles of consumption are distributed among the agents of production. As in the natural world rivers are replenished by the melting of the mountain snow, which is formed by the congelation of vapour, which is wafted up from the ocean, into which the rivers flow down ; so in the economic kosmos labour is restored and re-created by a refreshing rain of commodities derived from that sea into which all finished products are discharged. There is a continual flow of factors of production downwards, a continual flight of articles of consumption backwards. This kind of regularity has rather infelicitously been denominated 'statical', and had better be described in the

language of physics as *steady motion*; a term introduced by a high and appropriately named authority on the nature of an economic Flow—Mr. Flux.

In order that the movement should continue, there must be assumed a plurality of channels, as many at least as there are heads of necessary expenditure, food, clothing, shelter, and so forth. It is well to begin our search for the meaning of 'capital' by examining first the case of minimum complexity. So, to compare small things with great, Plato in his search for the meaning of 'justice' first imagines a simple community possessing only the requisites of animal existence—*ὅν πάλιν*. Afterwards with him we may superadd the luxuries of civilization—'dainties', 'perfumes', and 'cakes of all sorts', 'actors and dancers, and makers of all kinds of fancy articles, and in particular feminine finery'. The perpetual flow of necessary goods continually produced and consumed may be considered as persisting independently of the superfluous luxuries; as regards physical causation at least, for as a *final* cause, to constitute a motive, there must be assumed, I think, some amount of what Voltaire calls 'that very necessary thing, the superfluous'. At any rate the superfluous luxuries may be changed in character without disturbing the more essential parts of the system, the channels and currents physically necessary for the continuity of the flow.

To complete the parable it would be proper to conceive, moving in an opposite direction to the goods of all kinds, a counter-current formed by money—including instruments of credit—by which transfers of goods are effected. But it is impossible within my narrow limits to include with advantage a description of the part played by the monetary circulation. Besides, for the

purpose of obtaining a first approximation, there is a positive advantage in making abstraction, so far as possible, of the part played by money ; as is done with success in the theory of International Trade and other difficult economic problems.

The only other concrete circumstance to which it is necessary to refer at present is the growth of the system. There is no difficulty in conceiving the enlargement consequent on the growth of population considered as a change in quantity. There is more difficulty in representing the qualitative changes due to progress and invention. Whereas when contemplating a steady flow, in a given state of the arts, we may imagine some sort of mechanism (like locks on a canal!) at different points along the channels working regularly for the transmission of goods, and kept up constantly by applications of labour direct or embodied in tools or materials flowing from a distance ; we have now to consider the construction and positions of the mechanism as gradually altering—the length of the channels (measured from a fixed littoral) generally becoming greater with the increase of prospectiveness and ‘the effective desire of accumulation’ and their width becoming greater by the increase of industrial efficiency. These changes are often rapid and irregular in the modern world. Still it is an allowable artifice of science to make abstraction of such changes and treat a variable quantity as constant or varying uniformly, during a short interval of time.

The uniformity contemplated exists only on the average ; the regular flow of national production and consumption is consistent with uncertainty and disappointment on the part of the constituent individuals. So random motions of particles result in majestic uniformities of nature.

Such is the process associated with the idea of capital. Such is the system which war threatens to impair.

War, the great killer of joy, does not spare the humble pleasures of the statistician derived from the contemplation of unity in the midst of variety as presented by the course of peaceful industry. Horrid war breaks in upon this ideal of statistical uniformity; a cataclysm effecting violent changes in the channels of industry which it is difficult to follow with the eye of theory. The extent of the disturbance varies, indeed, greatly with the character of the war. The course of primitive industry was probably not much impaired by an encounter between savage tribes. At the opposite extreme are the wars of Frederick the Great as depicted by Macaulay: 'The very fields were uncultivated; the very seed corn had been devoured.' The intermediate conception appropriate to a long sustained war, like that which our fathers waged with Napoleon, is the settling down of violent disturbances to a new equilibrium or new comparatively steady movement in the channels of production such that, while the production and consumption of necessaries remains approximately the same, there are substituted in the channels hitherto employed in the production of superfluous luxuries—the cakes and ornaments of our illustration—shells and all the hideous instruments of war. 'Ploughshares' in a long modern war are not beaten into swords, harvests being still required for sustenance. But 'pruninghooks', if before employed in viticulture for the purpose of luxurious indulgence, may be converted into the modern equivalent of spears. Thus now in all the belligerent countries textile industries are turned from the production of fancy articles to supply clothes for the army. In England makers of brass door-handles have turned to the production of shrapnel-shells.

Plants normally used to make gear-cases turn out hollow ware tins and basins for the troops. Pen-making factories find new employment in manufacturing military buttons.

The rationale of this change has been presented in its broader aspects with peculiar force and clearness by one of our older writers on the economics of war; one who was qualified for a large and philosophic survey of the subject by a rare union of almost incompatible qualities. Christian charity was united, in the character of Dr. Chalmers, with a patriotic spirit of resistance to oppression; and both those strong feelings with a deference to reason in that severest form which is required by economic theory. No one has more accurately summed up the evils of war, the horrors of the battle-field reckoned with 'the arithmetic of accumulated wretchedness', in his own striking phrase, than Dr. Chalmers, preaching a few months after the battle of Waterloo. Yet he did not shrink from war, when war was necessary for independence, in the day of Napoleon's domination. With words that still breathe in their appropriateness to the present day, he boldly urged resistance to brute force, and clearly showed the source from which the means for resistance must be derived. 'Exchanging luxury for security and independence', that is the essence of the economic measures which are required. 'People, before employed on luxuries', are to be diverted to the labour of providing for military stores, of fighting for defence. 'Instead of splendour and luxury' 'they will receive liberty and protection and the conscious importance which ever accompanies the feeling of being an independent people.' 'These are feelings', said Chalmers, 'and they are worth the purchasing.' They are feelings, we may add, which the pacifists of our day ignore.

While thus splendidly presenting the end and essence of the changes in industry required by a great war, Chalmers is less successful in prescribing the proximate means by which those changes can best be brought about. His generally admitted errors are closely connected with misconceptions about the nature of public loans. He teaches well, no doubt, in words applicable to the present day that Government should enforce economy by taxation. 'Taxes will whip us on to improvement' in ways of economizing. But Chalmers, like others of the older writers, or more than others, exaggerates the superiority of taxation over an internal war-loan. The balance is not so simply struck by a general *a priori* theory.

Where the amount required is small, presumably if it is raised by loan, it will be taken from what is called fresh capital and *pro tanto* the accumulation of capital, the increase of what Adam Smith calls a 'perpetual fund' for the maintenance of productive hands, will receive a check. But capitalization will not be equally checked by moderate taxation of commodities. Say a small tax is imposed on dress-coats or other fashionable tailor-made apparel; and suppose the Government employ the proceeds in purchasing from the tailors—*pro tanto* unemployed by the shrinkage of demand for the taxed article—a somewhat greater number of military uniforms than usual; presumably the labour and materials which would have been employed in enlarging tailors' shops, improving sewing machines, and so forth, would still be so employed. In the language of our metaphor the widening and lengthening of the channels which would normally go on is likely to be checked by a loan for unproductive purposes; whereas in the case of a tax there is only a diversion so to speak of the

channel near the mouth, the reaches higher up are not affected. But it must be remembered that it is a very moot point—one about which very rash assertions have been made—to what extent accumulation of capital is checked by any proposed tax. The consequences of a very heavy tax, say on income or property, may well be such as we have attributed to a forced loan, worse than those of a voluntary loan. For one thing, as Leroy Beaulieu has pointed out, a huge and sudden levy could only be met by private borrowing on a large scale. The proposal made by some French politicians in 1871 to pay off the indemnity due to Germany at one stroke by a monster levy would have resulted in an immense indebtedness to private creditors more oppressive than the national debt of France.

With respect to the choice between loans and taxes, and more generally not only as to the acquisition but also as to the outlay of purchasing-power by the State, the ideal towards which the suggestions of economic theory should be directed is, I think, to impair as little as possible the channels of production, to divert them in such wise as to permit of their restoration after the war with least work and waiting. But this art is still in its infancy. Not even the methodical Germans, as one of them regretfully observes, have reduced to system the 'economic'—as distinguished from the 'financial'—preparation for war.

One suggestion of a general character may be offered. Economy is desirable, not only as enforced by the whip of taxation or induced by the attractions of a loan in order to supply Government with the means of prosecuting war, but also as practised more spontaneously by the private citizen, with the result, if not exactly with the purpose, of preventing the deterioration of capital, the breaking

up of the system by which the flow of production is maintained. It may be recalled that one of the first eye-opening lessons which the student of Political Economy learns from the text-books is that contrary to appearances the expenditure of the rich on luxuries does not benefit the working classes so much as 'saving'. No one who has read Bastiat or Mrs. Fawcett would seriously maintain Mandeville's specious paradox that the greatest benefactor to society is the person who capriciously adopts new fashions however absurd. As to the proper limit between saving and expenditure upon gratifications which may be defended as 'liberal', this must be decided, I think, in each case by common-sense freed from the incubus of an erroneous theory. Well, whatever limit was set in time of peace, this should be shifted in the direction of economy during the continuance of a great war. The common-sense motive to provision for self and family against the bad times coming is reinforced by a motive which economic theory supplies to patriotic spirit, the expediency of maintaining the capital resources the productive power of the country. Extravagance always foolish, never defensible on the plea of public interest, becomes in time of a great war decidedly unpatriotic and wholly inexcusable.

I must confine myself to general suggestions. It is impossible to advise upon the special questions connected with the cost of the present war, within my short limits, and as I have cut myself off from a consideration of monetary problems which are often involved in such questions. Thus I could not usefully discuss the advisability of imposing an import-, without an excise-, duty on a small set of articles—small in respect of their total value imported from a variety of countries—with

a view of rectifying the exchanges with America. Such questions pertain to what Aristotle calls practical wisdom (*φρόνησις*), which he says does not deal only with universals but requires knowledge of particular facts. But it is difficult in war-time at least, for one unconnected with administration, to ascertain the relevant particulars. For instance, with what degree of freedom is 'round-about trade' now operating? Are the new import duties introduced as an advance-guard for duties on a large scale designed for the same purpose? I must confine myself to expressing full agreement with the general proposition, the major premiss, with which the Chancellor of the Exchequer supported his proposals. 'The theory of Freetrade', he said, 'as I think, depends upon conditions which must be more or less permanent in their nature' in 'the theory which, as I think, is sound and true as a permanent policy may be quite undesirable in the special conditions which arise in war'.

This major premiss is well expressed, in connexion with some suggestions of a sufficiently general character to be noticed here, by an acute writer in the current number of the *Economic Journal*. 'In a measure the nations at war resemble towns in a state of siege. The economic problems are all problems of short periods, and arguments depending on how things would work out in the long run are not applicable in discussing the immediate situation.' With reference to the short period of a war Mr. Bickerdike ingeniously suggests that taxation should be directed to those objects which are required by the State for military purposes. 'If we want to draw chauffeurs from driving private motor-cars and taxicabs to driving army wagons and other necessary transport work, it is better to tax the use

of private cars and taxicabs than to tax incomes.' While not denying that Mr. Bickerdike's suggestions deserve much consideration I am concerned to dispute one of his premisses: the implied proposition that the services of actors and artists, that newspapers and other luxuries are things of which the State has no need in time of war. They are not, I grant, physical causes of military efficiency, like chauffeurs and motor-cars; but they may form *final* causes, motives acting on those who require payment from the State and will expend part of their pay on those kinds of gratification. Our soldiers expend part of their pay on cinemas (in the construction of which first-rate actors are often employed)—vicariously at least, if we believe *Punch*, in the persons of their wives who enjoy separation allowances. As for newspapers, which our author describes as 'these trifling extravagances of the multitude which use up resources which are largely divertible to more necessary ends', we may be sure that they are largely demanded by invalided soldiers at home, and by persons depending on soldiers at the front if not also by the men themselves. I wish the 'booming' wages now enjoyed by our coalminers and makers of munitions may not be expended on any luxuries less innocent than cinemas and newspapers.

My objection would fall to the ground if there were adopted a suggestion which I put forward rather as a counsel of perfection than as now and here applicable. Let us pay our coalminers and makers of munitions a living wage for the present, and supplement it by a bonus—whether a lump sum or an annuity—payable after the war, securing (if possible) that the right cannot be converted into present cash. The advantages proposed by such a scheme would be manifold. The workman would acquire habits of saving. In so far as he.

was placed in the position and took on the mentality of a capitalist he would become less prone to unreasonable strikes. The diminution of production and the temptation to extravagant indulgence, one or both of which evils are apt to attend an immense rise in the rate of wages, would be avoided. In fine, there may be claimed for the proposal at least a theoretical advantage in that it affords an object-lesson illustrating the nature of a public loan. For are not the workmen who agree to accept deferred payment of wages virtually subscribers to an internal loan? Concerning which it may be observed that, unlike an external loan, it is limited by the present powers of the subscribers, and accordingly is less likely to be enormous in relation to the means of the country than an external loan. The workmen are not likely to strain themselves for the sake of a bonus payable after the war! Among the assets available for meeting the not enormous obligation are the incomes of the creditors, becoming liable with the other tax-payers for the payment of the debt—a feature not common to a foreign loan, or any other ordinary kind of loan. Perhaps, however, the analogue of the capitalist subscribing to a national war-loan is not so much the worker at munitions, who while supplying services to the Government (for payment in part deferred) keeps his personal capital unimpaired, as the (supposed similarly paid) soldier on active service who unfortunately is apt on an average not to preserve his industrial capacity unimpaired.

As to the practicability of the suggestion I dismiss that consideration, and the consideration of other suggestions, by the comprehensive proposal that there should be created at some suitable time—perhaps not till after the restoration of peace—some sort of permanent

Committee concerned with the economic preparation for war; analogous to the official department of the German Government, whose business is the financial preparation for war. *Pessimi exempli*, it may well be objected. And it must be admitted with respect to all such preparation, especially if made publicly, that the idea of war continually presented and becoming fixed and familiar tends to become realized. The danger might be counteracted by the concurrent study of the art—if there is one—of ensuing peace. If economic theory could make any contribution to that art, the subject now under consideration would acquire a wider range. It would no longer be restricted to cost in the ordinary economic senses; for whatever diminishes war diminishes the cost of war in every sense—even in the sense in which cost is heaviest, that sacrifice of precious lives which makes a country poor indeed! But the only suggestion of this higher scope which I can think of is one which I have already made, based on the analogy between war and industrial disputes. Of these two great scourges, the former coeval with man, the latter special to modern times, the more recent has been more specially the object of scientific observation and analysis on the human side, at least with respect to the motives and interests by which disputes are brought about or may be diverted. *Industrial peace* has been the subject of more than one academic treatise composed in a scientific spirit very different from the maunderings of the common or political pacifist. The preferential attention thus bestowed on the more recent and, hitherto no doubt, the less serious of the two maladies is due no doubt to its closer connexion with the most exact—or least inexact—of the human sciences. It is not unreasonable therefore to hope that methods and prin-

ciples which have been of some avail in averting conflicts and composing differences between classes with opposed economic interests may be applicable or adaptable to dealings between nations with opposed interests that are called political, but are often largely economic. I trust that the suggestion may fall into hands capable of testing it practically.

NOTES

∴ The preceding text may be read and understood, but it should not be condemned without consideration of these supplementary notes.

PAGE 4. The authorities which I have consulted for statistics of the expenditure on recent wars are chiefly the following:

For the Franco-German War, 1870-1:

Giffen: *The Cost of the Franco-German War of 1870-1* (Essays in Finance, Series I, 1872, republished in *Economic Enquiries and Studies*).

De Foville: *Ce que coûte la guerre* (L'Économiste Français, 1880, Sept. 11, Oct. 23, Nov. 13, Nov. 27, 1880).

For both the Franco-German war of 1870-1 and subsequent wars:

Renau: *Finanzielle Mobilmachung* (1901).

Ludwig: *Kriegsführung und Geld* (Vierteljahrshefte für Truppenführung und Heereskunde, 1907, Heft 2).

Serrigny: *Les conséquences économiques de la guerre* (1909).

Henke: *Das deutsche Geldwesen im Kriege* (Vierteljahrshefte für Truppenführung . . . , 1913).

Riesser: *Finanzielle Kriegsbereitschaft* (1913).

Neuberger: *Die Kriegsbereitschaft des deutschen Geldmarktes* (1913).

Of these, Giffen, the earliest, was at the disadvantage of writing before all the relevant statistics were accessible. The lowness of his figure for the direct cost of the war to Prussia, compared with that which I have cited above, is thus, I believe, to be accounted for. His method of estimating the indirect loss of income seems open to criticisms gently put by De Foville. Most of the writers who have ventured to predict the cost of a war in the near future have fallen far

below the stupendous reality. The exception whose sagacity I have noticed is Neuberger.

PAGE 6. De Foville's discussion of the living or 'human' capital destroyed by war is in the *Économiste Français* for Nov. 13, 1880. See also *Écon. Franç.* 1875, Dec. 4. Mr. Crammond's estimate for the present war, based on a similar definition of the loss, is given in his paper on *The Cost of the War* in the *Journal of the Statistical Society* for May, 1915. A useful survey of different views on the modes of reckoning the 'value of the people', in Petty's phrase, is given by Dr. Marshall in the *Principles of Economics*, p. 564 (ed. vi).

PAGE 7. The statistics for the expenditure on armaments in time of peace are taken from Bastable's *Public Finance*, third edition (1903), Book I, ch. ii, and from Hirst's *Economics of War* (1915), Part I, ch. vi. The estimates for the indirect cost are given by Richet, *Le Passe de la guerre et l'avenir de la paix*, 1907, and by the *Arbiter in Council* (in the chapter on the Political Economy of War).

PAGE 9. Nietzsche's anti-utilitarian dictum—not the only one among his effusions—occurs in his *Twilight of the Idols*, Works (translated), vol. xvi, p. 2. The 'militarization of economic life'—for an end other than the happiness of the people—is proposed by Professor Jaffé, in the *Archiv für Sozialwissenschaft*, March, 1915; a doctrine justly denounced as 'hideous' by Mr. J. M. Keynes, in his masterly survey of the *Economics of War in Germany* (in the *Economic Journal* for Sept. 1915).

PAGE 10. The theorem which has figured so largely in moral arithmetic was enounced by Daniel Bernouilli—the son of John Bernouilli, who wrote on the cognate subject, *Ars coniectandi*—in his *Specimen theoriae novae de mensurâ sortis* (1730-1). The theory is justly described as *Die Grundlage der modernen Wertlehre*, by Dr. A. Pringsheim, who uses this expression as the title of a translation (from the original Latin into German) to which he has prefixed a useful introduction (1896).

It may be worth observing that the issue raised by those who regard Bernouilli's theorem as inadequate—who adopt what may be called a hyper-Bernouillian law or *function* to express the relation between wealth and welfare—has some bearing on the comparison sometimes drawn (by Mr. Lloyd George, for instance, when introducing his first War-budget (1914)) between the sacrifices made by our fathers in the struggle against Napoleon and those which we are now called on to make; if the comparison is based on the ratio between the amount of taxation and the total national income.

PAGE 10. The well-known editor of the *Edinburgh Review* alludes to the relation between means and welfare (which forms the first of my three factors) in connexion with the principle of taxation (which depends on the second factor) in the July (1915) number of the *Review*, p. 207.

Mr. Balfour's pronouncements on the subject of graduated taxation are to be found in *Hansard*, vol. iv (May, 1909), p. 1953 and p. 755 (cf. vol. vi, p. 513, and vol. xii, p. 1209). With reference to Mill's doctrine Mr. Balfour says: 'I confess I have never been able to take that clear abstract view of John Mill. I do not believe myself that it could be shown to be necessarily and obviously and on the face of it the proper and the just way of dealing with property.' 'I am not prepared to deny', he says in the context (p. 755), 'that some graduation is fair, convenient, and expedient.'

PAGE 11. The principle of taxation is discussed in the third of my articles on *The Pure Theory of Taxation* in the *Economic Journal* for 1897 (vol. vii, p. 550 *et seq.*), and in the first of my articles on the *Incidence of Urban Rates* in the *Economic Journal* for 1900 (vol. x, p. 173 *et seq.*).

PAGE 11. Hume's *Essay on Public Credit*, to which I allude, is, I think, concerned only with what I call *internal* loans.

Adam Smith, after denouncing the 'pernicious practice of funding' generally, adds: 'Though the whole debt were owing to the inhabitants of the country, it would not on that account

be less pernicious' (*Wealth of Nations*, Book V, ch. iii, p. 412, Cannan's edition).

Kant (*Zum ewigen Frieden*, 1795) seems to have no objection to a public loan for industrial purposes. It is significant to find the 'Eternal Peace' denounced by Professor Sombart in a recent screed (*Händler und Helden*, or *Hucksters and Heroes* as Mr. A. Gray, the translator of the brochure, happily renders the title) as 'the wretched book of the aged Kant', the solitary instance of a pacific utterance by a representative German, 'a sin against the Holy Ghost of Germanism'! To the English utilitarian Kant's benevolent project may well seem the most valuable of all the mighty metaphysician's lucubrations.

PAGE 12. Macaulay's statement as to the nature of an internal debt is quoted and questioned by Bastable in his *Public Finance* (Book V, ch. v).

My first description of the paradox which is often grafted on Macaulay's, I think, innocuous doctrine, is quoted from Hume's *Essay* (on *Public Credit*), what he calls 'the new paradox'. The second description is quoted from Melon's *Essai politique sur le Commerce* (1734, ch. xxiii). It is quoted by Melon with approval in the immediate context of his own dictum which has so offended orthodox economists, that 'state debts are debts from the right hand to the left'. It is clear, I think, from Leroy Beaulieu's observation about that dictum (*Traité des Finances*, II, pp. 224, 254, ed. vii), that it is the attendant paradox which chiefly provokes his condemnation of the dictum.

With reference to other pages it may be added that M. Leroy Beaulieu fully admits that 'les emprunts sont parfois nécessaires et préférables aux impôts' (p. 292). It may be doubted whether Prof. H. Dietzel, the acute apologist for borrowing (*Kriegssteuer oder Kriegsanleihe*, 1912), is so revolutionary in practice as may appear at first sight.

PAGE 12. The letter of Sir Robert Peel (father of the Sir Robert)—not a very strong letter, I think—is to be found in *The Times* for April 14, 1826. Tommy Moore's satirical

comment occurs in the medley entitled 'Cash, Corn, and Catholics'.

PAGE 13. My quotation of some expressions from J. S. Mill's chapter on *A National Debt* (Pol. Econ., Book V, ch. vii) is not to be taken as implying agreement with the entire context. Some parts thereof are sound, in particular the statements: 'A Government which borrows does actually take the amount within the year' (s. 1, par. 2); 'the payment of the interest is a mere transfer', involving, indeed, 'disturbance of the channels of industry' (s. 2); 'collective debt is a mutual insurance' (*loc. cit.*). Other parts appear tainted with the doctrine of the Wage Fund. On the whole I agree with Prof. Bastable's criticism of Mill's theory of public debts (Public Finance, Book V, ch. v). I venture to think that part of the instruction which is to be derived from Mill's treatment of the subject is what I have above called the lesson of modesty (page 17). I trust that this lesson will not appear to have been imperfectly learnt by one who ventures to express such a judgement about the utterances of so great men.

PAGE 14. The essence of my criticism on M'Culloch's curious computation (*Taxation and Funding System*, p. 423) is that he does not recognize the difference between an internal and external loan. He argues that what the tax-payer escaped paying in the 'nineties, by resort to an internal loan, remaining at his disposal, fructified at compound interest. I am not concerned to dispute this assumption. What I complain of is that he does not take into account the equal or probably greater fructification which the funds advanced by the subscribers to war loans would, if they had remained at the disposal of the subscribing capitalists, have experienced. Such cogency as the argument possesses is obtained on the assumption that the funds employed unproductively were funds borrowed from foreigners, the fructification of which does not concern us.

PAGE 15. No one has more clearly than Dr. Henry Adams stated the important fact that 'the injury sustained on account

of a [an internal] loan for war purposes is sustained at the time when the loan was contracted' (Public Debts, p. 245). If the nation borrows and the loan 'is consumed in the prosecution of a war', 'the nation is impoverished to the extent of the unproductive consumption since capital in the form of bacon, flour, clothes, implements, mules, and the like has been destroyed' (p. 245). 'The army can't live on bread to be delivered ten years hence' (p. 102). As this is a circumstance evidently peculiar to an internal debt, not common to it, with an external debt or one contracted by a private individual (where the loss incurred by the lender does not concern us) we may expect that Dr. Adams will not press this analogy. In fact he rests the choice between loan and taxation largely on the 'psychological factor', the 'psychology of taxation' (pp. 107, 109). 'A tax so excessive in amount' [as would have been required to meet the expenditure on the American civil war], 'precipitated without warning upon established industries, would have encroached upon working profit, weakened the incentive to labour, broken the mainspring of activity, and destroyed the mechanism of production' (cf. above, page 24, referring to Leroy Beaulieu's *Finances*, p. 287 (ed. vii)). To practical wisdom of this high order abstract theory can make no informing suggestion. It may be worth observing that the psychology which Dr. Adams takes account of is a normal state of mind, based upon real facts (the actual absence of profit and so forth). There is also a psychology, based on mere appearance, to which also the practical financier should attend, but with caution, lest in doing so he may dull the fine edge of reason. Pitt's sinking fund, defensible on psychological grounds (cf. Roscher, *Finanzwissenschaft*, s. 141), was probably all the more believed to be sound, because it was felt to be useful, by Pitt's contemporaries, perhaps Pitt himself. So a practical financier, attentive to the 'psychology of taxation', is apt to slur over a circumstance important in the view of theory, namely, that the advantage obtained by subscribers to a loan from a high rate of interest may be taken from them by a properly adjusted system of taxation (in our symbols making $[St_1]$ nearly or quite equal to $[Sx]$). Certainly it would seem not to be the

part of practical wisdom to call the attention of intending subscribers to this circumstance (but see on this circumstance an acute observation by Mr. Bickerdike in the *Economic Journal* for Sept. 1915, p. 437).

PAGE 16. The relations between different modes of meeting the cost of war may be exhibited by the use of symbols in the abstract—abstracting the psychological influence of appearances, the effect which different modes of raising funds may have in checking capitalization, and (all but the simplest of) the properties of money.

Let X be the sum required for military purposes, an amount which it is not for economic theory to discuss; it is to be regarded as assigned (above, page 8). This sum is exchanged for the satisfaction of wants which (before satisfied *gratis*, so to speak) have now become urgent (below, page 45), the immaterial goods of honour and liberty, say Ξ . It may be hoped that in a just and necessary war $\Xi - X$ is a positive quantity. It represents the balance of the nation's account in respect of satisfaction and 'real cost' when the means of war are raised at the time by taxation. When they are raised by a foreign loan, we have to balance against X received in the present a series of payments in the future, say $-[Sx]$, square brackets being used to represent future goods. And here let us guard against the confusion which Ricardo does not sufficiently guard against when, advocating payment by taxation at the time, he argues: 'Twenty millions in one payment, one million per annum for ever, or £1,200,000 for forty-five years, are precisely of the same value; but the people who pay the taxes never so estimate them' (Works, p. 539). If we use the symbol $=$ to denote equivalence in value, we must use some other symbol to denote equality in real cost, in felt satisfaction or its contrary, say \equiv . Because $X = [Sx]$, in general and in the normal exchange of future against present goods, it does not follow and is not true that $X \equiv [Sx]$. The balance, then, in the case of a foreign loan is

$$-X + \Xi + X - [Sx] = \Xi - [Sx].$$

In the case of an internal loan we have Ξ as before, and $-X + [Sx]$, not as just now relating to the nation as a whole, but to a part of it, the subscribers to the loan who pay down X at present and receive $[Sx]$ in the future. Let us denote by *round* brackets the partial character of this kind of real cost, say $(-X + [Sx])_1$, the subscripts outside the round brackets indicating the part of the population affected, namely, the subscribers to the loan, hereinafter termed the first part. To complete the account we must deduct from $[Sx]$ the interest (or, as the case may be, part repayment) which the subscribers from year to year receive, the series of taxes which from year to year they will have to pay, say $[St_1]$. There is also to be taken into account the taxes paid by the *second* part of the population, the non-subscribers, say $[St_2]$.

To sum up, if the real cost attending the expenditure of the sum X for military purposes at a present time be denoted by A , B , or C , according as the sum is raised by taxation at the time, by an external loan, or by an internal loan; then

$$A \equiv X$$

$$B \equiv [Sx]$$

$$C \equiv (X - [Sx] + [St_1])_1 + ([St_2])_2;$$

$$\text{where } [Sx] = [St_1] + [St_2].$$

It will be evident that there are no *a priori* quantitative relations between these magnitudes, as sometimes virtually presupposed. All depends on concrete circumstances. A is not necessarily less than B . As pointed out by Leroy Beaulieu, B has the advantage of bringing additional capital into the country (*Traité des Finances*, vol. ii, p. 239, ed. vii). But, as also pointed out by him, it may have the disadvantage of bringing the country under the control of its creditors. B is not in general equal to C . Much depends on the proportion between the t_1 's and the t_2 's. In the abstract, it may finally be observed, there is no difference between (the symbolic representation of) a voluntary loan and a forced loan. But there may be a great difference in the concrete circumstance which I describe as check to capitalization (page 23).

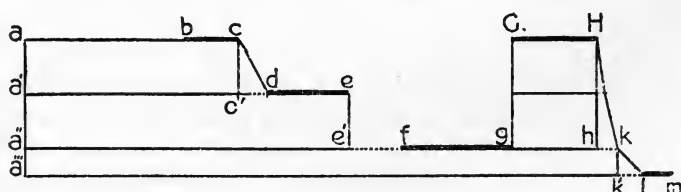
PAGE 17. The letter from Jevons which I quote is published in his *Life and Letters*, p. 439. His 'theory of capital

involving only the element of time' is set forth in his *Theory*. Compare Marshall, Appendix E, sect. 2; and Sidgwick, *Political Economy*, Book I, ch. v, § 5 'The essential point in the formation of capital is the employment of labour for a remote end'.

PAGE 18. The following amplifications may serve to elucidate the construction intended to illustrate a train of production, a series of means which conduces to the production of a commodity as a proximate end, and the consumption thereof as the final end. For further elucidation I refer to my article on the *Theory of Distribution* in the *Quarterly Journal of Economics* (1904, p. 196 *et seq.*), of which there is presented in these pages an abridgement with some modifications.

Let us take Mill's example of a train of production: 'The miller, the reaper, the ploughman, the plough-maker . . . derive their remuneration from the ultimate product—the bread made from the corn on which they have severally operated or supplied the instruments for operating' (*Political Economy*, Book I, ch. 2). Let us begin with the plough-maker (the last in Mill's analysis being first in the train of causation). Or rather let us first consider not the maker of a whole plough but the maker of a part, say a ploughshare, which may be supposed to be kept a year before it is used up at an assigned time (that denoted by the position of *abc* on the stream of time), or what comes to much the same, I think, that it begins to be used as soon as made and wears out in two years (cf. below, page 40). Then, if we suppose our ploughman to start with a plough wanting a share, the value of the incomplete plough being measured by the horizontal line *ab* in the accompanying figure, we may represent the addition to value due to the application of his labour by the thick (double) line *bc*. But we must also take into account the time that elapses between the application of his labour and the date when it comes into use; an 'abstinence' or 'waiting' for which compensation must be made (according to the received theory of interest—or discount—the practical application of which is well illustrated in Professor R. H. Smith's article on *The Measure of*

Industrial Economy in the *Economic Journal*, 1906). Let the dotted line $c'd$ ($= I ac$ where I is the rate of interest or profit) measure this addition to ac ($= ac'$) accruing through the descent of the stream of time by a unit. At this point we may suppose the labour of the ploughman to be applied, adding the value de ; and making the total value in the hands of the original *entrepreneur* or some substitute (to whom he has passed it on for a consideration which we shall not represent separately) $a'e$. Again a unit of time elapses before the additional labour of reaping is applied. Let the additional reward for saving be $e'f$ ($= I \times a'e$). And let fg denote the added labour of the reaper.



The value of this harvest is now to be combined with the value due to milling. If this was performed by hand (with hand-mills of negligible value) no new construction would be required. But in fact the payment for milling must be such as to remunerate the outlay on a machine which lasts several years—say four, for the purpose of illustration. Then we are to conceive a fourth part of the mill worn out each year, a fourth part renewed by labour which may be considered (cf. Jevons, *Theory*, ch. vii, p. 246, ed. 2) as applied at a date half-way between the time when the mill begins to bring in returns and the time when it is quite worn out; that is, two years before its use at an assigned time such as that which we are considering, corresponding to the position of the line $a''k$. Thus if gk represent the expense of milling (the quantity assigned) in a particular year, it may be conceived as made up of the expense of labour, GH , applied two years before and the reward of waiting that time, represented by hk . We have now reached the flour which Mill seems to treat as the finished article. However let us add a little for some addi-

tional waiting, and for the baker or cook who converts the flour into bread. Thus $a'''m$ measures the value of the finished product; being exactly equal to the sum of all the expenses of production all the thick and thin lines which the line $a'''m$ subtends (it being understood that ab is resolvable into thick and dotted lines on the same principle as gk).

The channel which has been described is typical of a thousand others which, descending from the heights of capital, discharge volumes of finished commodities across a littoral which is to be conceived as a long straight line ($a'''m$ produced) which forms the measure of the national income.

Commodities, as they cross the shore-line, are caught up as in clouds and hurried back—not straight back, but tossed hither and thither in all directions—so as to fall like a refreshing rain upon the various tracts from which the streams are fed as they descend (the thick and thin lines of our figure, or rather rectangles, having one of those lines for length and unit breadth). As the rain from heaven, the showers of commodity fall impartially upon the more and the less deserving, the toiling worker and the sleeping shareholder. Not all the showers feed equally the sources from which they are derived. A distinction must be drawn between commodities like bread which (or something like which) must be consumed in order to continue producing more bread, and commodities like the ‘cakes’ of our illustration. Yet the consumption of the latter class in so far as it creates a motive to production, as well argued by M'Culloch (*Principles of Political Economy*, Part IV, especially p. 587, edition 4) may be regarded as not unproductive. Thus in a sense the streams and clouds are mutually effect and cause. The streams continually roll down renewing the clouds; the clouds continually float back replenishing the streams.

‘Perpetual circle multiform and mix,
And nourish all things’

—we may almost say of this economic Cosmos what was sung in Eden of the elements of Nature!

I strive to be brief at the risk of becoming obscure. I leave much to the imagination of the student. I do not affect

a lawyer-like precision proof against misconstruction. The very *raison d'être* of the mechanical illustration is to avoid the tedium of verbal explanations. The appropriate conception of an economic Flow dispenses with much wearisome dialectic concerning the definition and properties of *capital*.

I do not hope for more from the mechanical illustration than that it should belong to the class of what Dr. Marshall describes as the 'most helpful applications of mathematics to economics', namely, those 'which aim at throwing a bright light on some small part of the great economic movement rather than at representing its endless complexities' (Economic Journal, vol. viii, p. 39). I am aware that neighbouring parts of the economic system are left in darkness. Thus the illustration is not adapted to exhibit what Cairnes calls commercial equilibrium; for instance, that iron will have the same value, whether used for ploughs or mills, whether applied high up or low down in our channels of production. Nor is the illustration meant to illustrate what Cairnes called industrial equilibrium—the equality of net advantages in industries, between which there is mobility of labour. My thick horizontal lines represent the 'remuneration of labour' rather than the 'quantity of labour', as distinguished by Ricardo (Political Economy, ch. i, § 1 *et passim*), the money value not the 'real cost'. To represent quantity of labour—to bring out, for instance, the alleged fact that for labour of the same efficiency women are paid less than men—it would be proper to resort to a third dimension, to measure downwards a distance representing a quantity of labour (the amount corresponding to a unit of pay) modifying in this sense our original conception that the depth of all the channels was uniform.

PAGE 19. The distinction between necessary and superfluous production may be exhibited in terms of the secondary illustration which I have employed in the earlier version (Quarterly Journal of Economics, 1904, p. 196). The idea of a train of production formed by successive operations directed to an ultimate product is presented by a process which may be observed in almost any factory. In a textile factory, for instance, you may have the raw cotton wool put in here, there

you see a 'sliver' of carded cotton flowing from one machine *en route* to another, until at the last stage there comes out the finished article. To this conception must be superadded a backward flow of finished products; effected, say, by some mechanism overhead. This mechanism, I need hardly say, is not to be observed in any factory; like one of the contrivances in another world,

'Novello a noi perchè qui non ci truova'.

By some such wondrous backward flow the finished product is distributed among the several producers. Well, let us imagine one kind of factory employed in the production of necessities, the *ἱμάτια καὶ ὑποδήματα* of our Platonic metaphor (*Republic*, ii. 273, 372, referred to at page 19 above); while another kind of factory produces commodities which can be discontinued without impairing the continuity of the economic flow, say *τὸν γυναικῆον κόσμον* (*loc. cit.*).

But it must be remembered that the distinction between necessities and luxuries is somewhat indefinite (cf. Marshall on *Conventional Necessaries*). It is a distinction which is likely to be modified in the course of a long and arduous war. Thus the Germans are now finding that, as one of their Professors puts it (Lederer, *Archiv für Sozialwissenschaften*, Band 40, Heft 1, 1914), 'the conception of the not-indispensable has been very considerably widened'.

PAGE 20. It must be insisted that the economic flow is steady only in a statistical sense, on the average, and not as regards the individual parts. As Dr. Marshall well says of the so-called *Stationary State*, 'it is full of movement; for it is a mode of life'. It is in this context (*Economic Journal*, vol. viii, p. 41 *et seq.*) that Dr. Marshall adopts the term 'steady motion' suggested by Mr. Flux (cp. Flux, *Economic Principles*, sub voce *Capital*). Dr. Marshall adds, in passages which should be read in full (cf. above, page 19): 'The fiction does not require that the numbers of the population should be stationary . . .' (*loc. cit.*, p. 41). Some corrections may have to be made, but 'so far as this change is concerned, the general outlines of our pictures will be true to the facts of life' (*loc. cit.*, p. 42).

The character of diversity in the midst of uniformity appears to me not to be sufficiently recognized by Professor J. B. Clark in his otherwise instructive expositions of the function performed by capital. He has interpreted his beautiful parable of a 'waterfall' too literally. He is so impressed with the continuity of the economic flow that he excludes the incident of 'waiting', the superiority which the difference in time gives to present over future goods. The articles consumed by the labourer are called the 'true and immediate fruit' of his labour. 'The water that at this moment is flowing from the inlet into the upper end of the reservoir may consume a fortnight in reaching the turbine wheel; but if a full reservoir be supposed the inflow causes motion at once' (*The Genesis of Capital*, Yale Review, Nov. 1893, p. 310, criticized, I think effectively, by Böhm Bawerk in the Quarterly Journal of Economics, vol. ix (1895), p. 115. See also J. B. Clark, *Distribution of Wealth*, ch. ix). This is not the first time that I am constrained to express dissent from Professor J. B. Clark's conception of a 'static state' as a 'cessation of all variations due to ... fire, lightning, hail'. 'We must imagine industrial society in the static condition as an automatic machine ... working without friction in an absolutely unchangeable element.' I regard this conception of an economic flow as inappropriate.

PAGE 21. The examples of industries in England diverted from their original peaceful purposes to the uses of war is taken almost verbatim from Prof. W. R. Scott's powerful Presidential Address to Section F of the British Association, 1915. Other examples relating to other countries both neutral and belligerent will be found in Alberti's well-informed treatise (*Economia del Mondo prima, durante e dopo la guerra europea*, 1915). The difficulty and delay attending such transformations are noticed by Mr. Arthur Shadwell in his recent article on *The Industrial Factor in the War* (Nineteenth Century, Aug. 1915, p. 240). In the United States and Canada 'the manufacturers were in the same position as our own: time was needed for the conversion and organization of their works'.

PAGE 21. The loss of pleasure incurred by the non-

combatant part of the community when they divert to expenditure the means previously expended on luxury, as well as the greater privations suffered by the combatants, cannot be expressed better than in words originally applied to the latter kind of suffering, the beautiful passage in the *Ajax* of Sophocles where the inventor of war is denounced by the chorus of weary warriors :

κείνος γὰρ ἔπερσεν ἀνθρώπους.
 ἐκείνος οὔτε στεφάνων
 οὔτε βαθειᾶν κυλίκων
 νείμεν ἐμοὶ τέρψιν ὀμιλεῖν,

 ἐρώτων δ' ἐρώτων ἀπέπαυσεν, ὦμοι.

A faint echo of these laments may be perceived in the tone of a military expert who dilates on the luxuries discontinued in France during the war of 1870-1. The regretful enumeration culminates in 'articles de Paris, bibelots de toutes catégories, modes et lingeries, dont la raison d'être réside dans la paix, dans la femme et dans l'amour' (Serrigny, *La guerre et le mouvement économique*, ch. vi).

PAGE 22. Chalmers's estimate of the misery caused by war is given in his sermon *On Universal Peace* (1816). My other quotations are from his *Enquiry into the Extent and Stability of National Resources* (1808). What is admirable in this work are the two main features which I have endeavoured to reproduce. Chalmers powerfully exhibits the need of security and independence made urgent by the 'brutality of force' then dominant (as now threatening) in Europe (*passim*, and in particular the passage worthy of Demosthenes at pp. 63-4), and the necessity of diverting to the satisfaction of that urgent want means previously expended on superfluous luxuries (pp. 54, 131, 163, 165, 213-14, 225 *et passim*). The economic reasoning by which he supports this practical conclusion does not equally command admiration. It is, I think, open to all the objections which have been urged by high authorities against the substantially identical doctrines restated in his later published and better known *Political*

Economy (1832). His view of a public debt as a double burden is twice removed from the view which I have entertained. Other doctrines—the pre-eminence assigned to landlords who enjoy among other privileges that of ultimately supporting the whole burden of taxation, the insignificant rôle of commerce, the treatment of the labourer's maintenance as a constant quantity—'they will have the same degree of comfort and subsistence' (*Extent and Stability*, p. 12 *et seq.*)—these tenets have at most the degree of truth which J. S. Mill attaches to the last, as held by Ricardo; it 'contains sufficient truth', says Mill (*Pol. Econ.* Book II, ch. xi, § 2), to render it admissible for the purposes of abstract science'. These assumptions are at best a wooden scaffolding which may prove useful to those who are raising the edifice of science. Accordingly, I agree with Professor Bastable's criticisms on Chalmers's theory of public debts; and with the more general criticisms, made by M'Culloch, as I surmise, in the *Edinburgh Review* for 1832. But I am not thereby precluded from accepting Professor Nicholson's more appreciative estimate of Chalmers's work as a whole. (See his Preface to Miss Grace Chalmers Wood's *Opinions of Dr. Chalmers concerning Political Economy . . .* (1912); and the articles in the *Scotsman*, to which references are there given.)

PAGE 25. The most paradoxical statement and the most piquant illustration of Mandeville's doctrine are those which he himself has selected from the *Fable of the Bees* (or rather from an essay bound up with the *Fable*) to be repeated at the end of his *Letter to Dion* (in reply to Bishop Berkeley's *Minute Philosopher*).

PAGE 26. The speech to which I refer was made by the Chancellor of the Exchequer in the House of Commons on Sept. 23.

PAGE 26. The question whether 'round-about trade' is now functioning normally appears to be answered in the affirmative by the well-informed Committee of the British Association, Section F, which deals with *The Effects of the*

War on Credit, for they say in the course of their able Report: 'Though the present difficulty is the exchange rate with America, the rate can be directly influenced by trade transactions with other countries' (p. 33). The significance of the question will appear if we compare the amount of the newly-taxed articles imported from America with the importations of the same articles from all countries into the United Kingdom. I have made the comparison with the aid of the Blue-book entitled *Annual Statement of the Trade of the United Kingdom with Foreign Countries and British Possessions, 1914, compared with the four preceding years*, vol. i [Cd. 7968], with respect to the following newly-taxed articles:

Motor-cars and bicycles, with component parts and accessories other than tyres;

Musical instruments, with component parts and accessories;
Clocks and watches and the component parts thereof.

I do not find statistics for the remaining article on which import duties have been imposed—cinematograph films. According to my rough calculation the proportion between the value of the named articles imported from the United States of America and the value thereof imported from the whole world was for the year 1913, and also for the year 1914, less than half.

PAGE 27. The distinction drawn by Mr. Bickerdike (*Economic Journal*, 1915, p. 441) gives certainly the rule for *commandeering* things ready to hand, commodities and services. But in so far as such commandeering is to be subsequently compensated by contributions from the tax-payers, I presume that the ordinary rules of taxation will hold good. For commandeering *money*, as a levy with reference to a short period may be described, the suggested rule is I think less applicable than might be supposed, for the reason which I have given in the text. Still, Mr. Bickerdike's acute analysis deserves much attention.

PAGE 28. As to the possibility that a great increase of wages may be attended with a diminution in the amount of work done compare Jevons, *Theory*, ch. vii. Testimony

bearing more directly on the matter now in hand is presented by Mr. Shadwell in his article on *The Industrial Factor in the War* (Nineteenth Century, August, 1915, p. 241): 'Higher earnings produced less work.'

PAGE 29 (and 24). Contrary to what might be supposed, the Germans appear not to have thought out beforehand fully the economic arrangements proper to the conditions of their present warfare. It was the *financial* preparation for war which principally occupied the attention of the experts. For a campaign like that of 1870-1, followed by an indemnity, financial arrangements would no doubt have been sufficient! Professor Lederer, in the periodical above cited, laments explicitly the absence of any systematic treatment of the economic conditions. To the same effect Jaffé (*loc. cit.*, p. 513).

PAGE 29. The analogy between industrial disputes and war is traced at length in my *Lecture on the Relations of Political Economy to War*, given in the summer term of 1915, and published by the Oxford University Press. In exhibiting the analogy I frequently refer to the two scientific treatises which deal with the practical methods and theoretical principles of *Industrial Peace*.

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